

THE CULTURE OF THE GREY CLUSTER BUG, *NYSIUS CLEVELANDENSIS* EVANS UNDER LABORATORY CONDITIONS

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Abstract

Nysius clevelandensis Evans was cultured under laboratory conditions by feeding nymphs and adults on whole sunflower seeds. The total period from egg to adult was 33 days at $25 \pm 2^\circ\text{C}$ and each female laid an average of 95 eggs.

Introduction

Nysius clevelandensis Evans is one of three pest species of *Nysius* occurring in Australia, the other two being *N. turneri* Evans and *N. vinitor* Bergroth. *N. turneri* is restricted to Tasmania while *N. vinitor* (the Rutherglen bug) occurs in all states and *N. clevelandensis* in all states except Tasmania (Evans, 1936; Woodward, 1964). In general, *N. clevelandensis* is adapted to wet tropical and subtropical conditions, whereas *N. vinitor* can better withstand extremes of temperature and lower humidity (Woodward, 1964). At present, research in this field has concentrated mainly on *N. vinitor* (e.g. Kehat and Wyndham, 1972a, 1972b, 1973). *N. clevelandensis*, despite its wide distribution and its predominance in many areas has received scant attention. This paper concerns some aspects of the biology of *N. clevelandensis* under laboratory conditions.

Materials and methods

Nymphs and adults of *N. clevelandensis* were collected from fleabane (*Erigeron* sp.) at Camden, New South Wales. Studies were undertaken in a room held at $25 \pm 2^\circ\text{C}$ with variable lighting and relative humidity.

To determine a satisfactory culturing technique, trials similar to those of Attia and Elshafie (1973) for *N. vinitor* were conducted. Firstly, adults were placed on young sunflower plants inside a wire gauze cage 25 x 36 cm. Compacted cotton wool rolls on sticks were provided as oviposition sites. Secondly, adults and nymphs were fed on *Erigeron* sp. immersed in a flask of water. The flask was enclosed in a cylindrical perspex container 10 x 25 cm. The *Erigeron* was changed every second week. Two compacted cotton wool rolls inserted through holes in the plastic lid served as watering and oviposition sites. Thirdly, nymphs and adults were placed in cylindrical perspex containers, 4 x 6 cm, and fed whole and crushed seeds of soybean and sunflower. The screw-on lid of each container was fitted with fine stainless steel gauze. Cotton wool rolls again served as oviposition and watering sites, water being supplied every second day.

To study the life history, copulating bugs were transferred to 4 x 6 cm containers utilizing the same conditions as described immediately above and fed whole sunflower seeds. Eggs were collected and the duration of all life stages was noted. Records were taken daily.

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Results and discussion

Culture methods using sunflower plants or *Erigeron* were unsatisfactory. With both methods, mortality of adults was high. Feeding the bugs on soybean seeds, either whole or crushed, was unsatisfactory because nymphal mortality was high. Whole seeds of sunflowers which were replaced twice weekly, however, were found quite satisfactory as mortality of both nymphs and adults were low. Occasionally, significant mortality was observed in second instar individuals. These nymphs, much more active than first instar nymphs, died in droplets of condensed water when excess water was supplied. To avoid mortality, therefore, the amount of water given was reduced to a minimum. This method was used in the life history studies and differs from the methods for *N. vinitor* used by Attia and Elshafie (1973) and Kehat and Wyndham (1972a) utilizing crushed sunflower seeds.

The duration of each stage from egg to adult (10 observations of each stage) is given in Table 1. The total period from egg to adult is 33 days. This compares with 29 days for *N. vinitor* at the same temperature (Kehat and Wyndham, 1972a).

Both males and females are polygamous and the egg laying period extends from 14-20 days after which the female soon dies. The numbers of eggs produced ranged from 80-150 with a mean of 95 (24 observations). This was much lower than *N. vinitor* which laid 578 eggs at 25°C (Kehat and Wyndham, 1972a).

TABLE 1. Duration of life stages of *Nysius clevelandensis* under laboratory conditions at 25±2°C.

Developmental stage	Mean duration (days)
Egg	7.0
Larval instar I	6.5
II	4.5
III	4.5
IV	4.5
V	6.0
Preoviposition period	5.5

References

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